

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Previously Presented) An apparatus for generating corona discharges, comprising  
a structure defining a corona discharge space;  
a discharge electrode disposed in the corona discharge space;  
a high voltage source; and  
a diode element connected between the high voltage source and the  
discharge electrode, the diode element delivering to the discharge  
electrode a positive DC high voltage component comprising a  
superposed AC high voltage component.
2. (Previously Presented) An apparatus according to claim 1, wherein the diode  
element comprises at least one of a rectifier, a transistor, a diode, or a thyristor.
3. (Previously Presented) An apparatus according to claim 1, wherein the diode  
element comprises a single-phase rectifier.
4. (Previously Presented) An apparatus according to claim 1, wherein the diode  
element comprises a bridge rectifier.
5. (Previously Presented) An apparatus according to claim 1, wherein the positive DC  
high voltage is 10-60 kV.
6. (Previously Presented) An apparatus according to claim 1, wherein the AC high  
voltage has a frequency of 0.1-100 kHz.
7. (Previously Presented) An apparatus according to claim 1, wherein the discharge  
electrode comprises an elongated body having a plurality of projecting members.
8. (Previously Presented) An apparatus according to claim 7, wherein the projecting  
members extend on either side of the body.

9. (Previously Presented) An apparatus according to claim 1, wherein the structure defining the corona discharge space comprises at least two parallel, electrically earthed plates, the discharge electrode extending in parallel with and between the plates.
10. (Previously Presented) An apparatus according to claim 1, comprising an inductance-resistance circuit connected to the discharge electrode, wherein the diode element is connected in series with the inductance-resistance circuit.
11. (Previously Presented) An apparatus according to claim 10, wherein the inductance-resistance circuit has an adjustable inductance value.
12. (Previously Presented) An apparatus according to claim 10, wherein the inductance value of the inductance-resistance circuit ranges between 1 nH and 1000 mH.
13. (Previously Presented) An apparatus according to claim 1, wherein the high voltage source comprises an AC-to-DC pulse converter.
14. (Previously Presented) An apparatus according to, claim 1, wherein the high voltage source comprises an AC-to-DC-to-AC converter.
15. (Currently Amended) A discharge electrode, disposed within a structure defining a corona discharge space, for generating corona discharges, the discharge electrode receiving from a diode element a positive DC high voltage component comprising a superposed AC high voltage component, the discharge electrode comprising:
  - an elongated body; and
  - ~~having~~ a plurality of projecting members extending on at least one side of the body[.];
  - wherein the elongated body comprises at least one elongated strip with the projecting members separated by a predetermined distance  
~~punched-out spaces.~~
16. (Previously Presented) An apparatus according to claim 1, wherein the DC high voltage is 5-35 kV.

17. (Previously Presented) An apparatus according to claim 6, wherein the frequency of the AC high voltage is 5-30 kHz.
18. (Previously Presented) The discharge electrode according to claim 15, wherein the projecting members comprise a plurality of cams formed in series along the elongated strip.
19. (Currently Amended) The discharge electrode according to claim ~~[[19]]~~ 18, wherein a spacing between successive cams is 1-100 mm.
20. (Currently Amended) The apparatus according to claim 1, wherein the structure defining the corona discharge space is connected to an electrical ground and the diode element delivers to the discharge electrode the positive DC voltage component comprising the superposed AC high voltage component so as to form forms a positive streamer corona plasma within the corona discharge space in response to the positive DC voltage component.